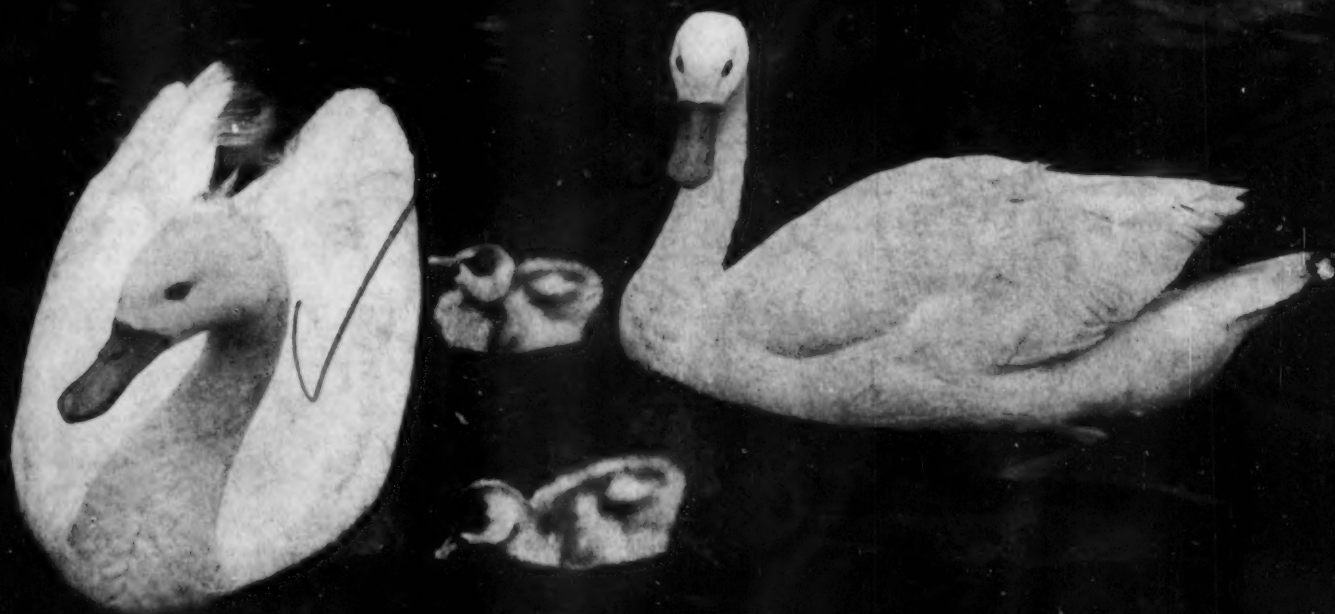


JULY 29, 1950

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Baby Coscorobas

See Page 68

A SCIENCE SERVICE PUBLICATION

\$5.50 A YEAR

VOL. 58 NO. 5 PAGES 65-80

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New RCA overseas teleprinter service by radio, first open to the public, now links New York and Holland.

Now "Flying Stenographers" span the sea!

You are familiar with *teleprinter* service which delivers a typed message, by wire, at high speed. Now this useful service takes to the air on a person-to-person basis, and is spanning the Atlantic Ocean by radio!

This new achievement, called TEX, was developed by RCA engineers and European experts. Its heart is an amazing machine that thinks in code, detects errors which may have come from fading or static—and automatically insists on a correction!

If, when RCA's "TEX" is at work, a letter becomes distorted, the receiving instrument rejects the character and sends back a "Repeat, please" signal in fractions of a second—then repeats it until a correct signal is received. Like other RCA advances in radio, television, and electronics, RCA's TEX system helps make radio waves more useful to all of us—and in more ways!

* * *

See the newest in radio, television, and electronics at RCA Exhibition Hall, 36 West 49th St., N. Y. Radio Corporation of America, Radio City, New York 20, N. Y.



RCA Research and pioneering provide a basis for the superiority of RCA Victor television receivers—the best buy on the 1950 market.



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MEDICINE

Leukemias May Be Licked

Cortisone and a chemical which neutralizes folic acid may be the winning team against leukemias. Cortisone alone is not permanently effective.

► A TWO-CHEMICAL relay team shows promise of winning the race for a reasonably effective means of checking the leukemias.

This encouraging information was disclosed to an international gathering of cancer researchers at the Ciba Foundation in London by Dr. J. H. Burchenal of the Sloan-Kettering Institute, New York.

Cortisone, the adrenal gland hormone already famous for its effect in rheumatoid arthritis, is half of the combination. Its team mate is a chemical which antagonizes and neutralizes the vitamin, folic acid.

Prior to Dr. Burchenal's disclosure the assembled cancer experts had heard the success-failure story of the use of cortisone alone in the treatment of leukemias. Dr. Burchenal himself had reported the dramatic improvement in many leukemic children and adults given this chemical.

However, the improvement lasted only a

few weeks. Further courses of treatment in relapsed patients might give second improvements in children, but not in adults. Thereafter the effectiveness of the hormone fell off rapidly and the patients died of their leukemias.

Dr. Burchenal's colleagues at Sloan-Kettering, Dr. C. Chester Stock and Dr. K. Dobriner, verified the purely temporary effectiveness of cortisone against lymphatic cancers both in experimental mice and in humans.

The cancer researchers at Sloan-Kettering hope that by alternating cortisone treatment with courses of folic acid antagonists, which have themselves shown temporary effectiveness in checking leukemias, they will be able to bypass the resistance developed by the cancer cells to each of these treatments when used singly.

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PSYCHOLOGY-AERONAUTICS

Flying Psychological Lab

► HOW pilots of speedy military airplanes react to problems encountered during flight is being determined in Dayton at the Wright-Patterson Air Force Base with a new-type flying set-up dubbed an Airborne Psychological Laboratory.

High speed in the air calls for double-quick thinking and split-second action. Engineering psychologists at the Air Base are endeavoring to design and develop flight equipment that will permit the operator to function as efficiently and safely as possible.

The airborne laboratory is a C-47 aircraft equipped with special electronic scoring devices which record how accurately pilots are able to maintain heading, altitude, speed and many other variables of flying. The equipment consists of a motor generator, sensing units, a scoring console and a recording console.

Whenever a pilot adjusts his instruments to correct a flight problem the sensing instruments translate the action into electrical impulses which are recorded for future study. On the scoring console are electric stop clocks which indicate the length of time a pilot is "out-of-bounds." This is the time that he is unable to keep within the allowed tolerances for such variables as airspeed, altitude, pitch, angle of bank, rate of turn and others.

A voice recorder and motion picture camera record the pilot's comments and

his eye and body movements during the tests. One of the greatest problems of flying has always been that of fatigue. A pilot may think that a long flight does not tire him, but the instrument scores show that the longer the flight the less able the pilot is to stay within tolerances.

Science News Letter, July 29, 1950

ENGINEERING

Better Heating Oil by Using Furfural as Solvent

► BETTER heating oil for use in homes is promised with an extraction unit using furfural as the solvent. This unit will be employed in a new refinery ready for operation in Eagle Point, N. J., by the Texas Company.

The use of furfural will also give improved fuels for diesel engines, and it greatly reduces the sulfur content of both heating and diesel fuels. This is particularly important at the present time because it is now necessary to use oil from new wells which deliver crude oil containing considerable sulfur.

Furfural has been widely used by the oil industry for the removal of sludge-producing elements in motor oils. The new \$60,000,000 refinery is the first commercial extraction unit to employ furfural in the

production of diesel and heating oils. Furfural is an organic chemical that can be made from farm wastes, including corn cobs.

Science News Letter, July 29, 1950

RADIO

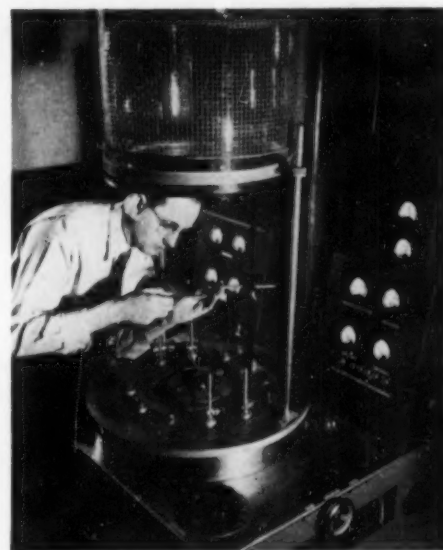
Mirrors Reflect One Color Only for Color Television

► MIRRORS that reflect one color only, blue, green or red, developed in Pittsburgh at the Westinghouse Research Laboratories, promise to play an important part in the color television of the future.

The mirrors are made by depositing extremely thin layers of metallic compounds on clear glass. The process is carried out by a vacuum-spray method. The glass is placed in a glass-jar "oven" from which most of the air has been removed. A special metal compound in the jar is then heated electrically. It melts and sends vapors on to the glass sheets. The vapors solidify into an ultra-thin smooth, even film.

The thickness of the films determines the particular color the mirror will reflect. For blue, the thickness may be about one-fourth the wavelength of blue light, or about 16 millionths of an inch. For green, the layer is only slightly thicker. Red reflection requires the thickest film.

The mirrors are for use at both ends of the television system. At the transmitting



ONE AT A TIME—This clear glass sheet will soon become a mirror that "sees" and reflects only one color at a time—either red, green or blue. Demonstrated by Kenneth L. Fromm, the mirrors will be used at both the transmitting and receiving end of experimental color television apparatus.

end they pick up the color picture from the camera and break it down into its three basic colors. These are sent in the proper sequence through the system. At

the receiving end, another set of mirrors gather in the colors and help regroup them in the color picture seen on the screen.

Science News Letter, July 29, 1950

MEDICINE

Aureomycin for Lumpy Jaw

► AUREOMYCIN may turn out to be a cure for lumpy jaw, or actinomycosis as this cattle disease that humans get is known medically.

Four human patients with this disease have now been treated successfully with the mold drug, Drs. Leon V. McVay, Jr., David Dunavant, Douglas H. Sprunt and Miss Frances Guthrie of the University of Tennessee College of Medicine and John Gaston Hospital, Memphis, report in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (July 22).

The first patient had been sick for six months, in spite of treatment with penicillin and X-rays. When he entered the hospital he had a slightly reddened mass covering most of the right side of his face and reaching down his neck. It was exuding a yellowish pus from three places.

His diet was limited to liquids because he could not open his mouth as wide as half an inch.

He was given aureomycin by mouth every four hours and a semi-paste of the mold drug was put on the sores on face and neck.

"The response was dramatic," the scientists report.

Within two days he could eat comfortably and his slight fever had gone. He continued to take the mold drug for 28 days, by which time the swelling had gone and there was only a minimum amount of scarring over the opening where the pus had been draining. He was still entirely well six months later.

While the value of the drug can hardly be judged on the basis of only a few cases, especially in a disease which tends to recur as actinomycosis does, the Memphis scientists report the good results in the hope that other doctors will be stimulated to try it in this ailment.

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On This Week's Cover

► TWO coscorobas, rare birds from South America, have established another "first" for the Philadelphia Zoo by hatching out a pair of babies. Believed to be the first of their kind ever to hatch in America, the only other record of their breeding in captivity was established in England shortly before the first World War.

The coscoroba comes closer to being a "swoose" than any other bird on the earth. Some scientists have classified it as a swan and others as a goose. Still other ornithologists look upon it as a giant tree duck. The question is—what should the hatchlings be called—goslings, ducklings, cygnets (baby swans), or "swooslets"? The parent birds are of goose size, and they have snow white plumage save for the outer wing feathers which are black. Their bills and legs are pink. The new additions are very light grey with dark markings.

The coscoroba family built a nest in February, and the female laid two eggs; however one rolled into the pool and the

other was infertile. Some weeks ago they built again, and after 46 days of incubation, the young hatched out. Both parents guard the young ones jealously and shoo away the white mallards that occupy the same enclosure with them.

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Swimming during a thunder and lightning storm is not recommended; a person can be electrocuted by a charge carried by the water from the bolt striking at some distance.

SCIENCE NEWS LETTER

VOL. 58

JULY 29, 1950

No. 5

45,100 copies of this issue printed

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W. Washington 6, D. C., NORIN 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

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Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 3440, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566 and 360 N. Michigan Ave., Chicago. STAt 4439.

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The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

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Question Box

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GEOLOGY

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ORNITHOLOGY

What kind of gull follows a ship from shore to shore? p. 78.

ZOOLOGY

What is the age of the oldest seal? p. 70.

Photographs: Cover, Philadelphia Zoo; p. 67, Westinghouse Electric Corporation; p. 69, Crosley Motors, Inc.; p. 71, Bureau of Reclamation, Boulder City, Nev.; p. 80, McDonough Studios, Washington, D. C.

MILITARY SCIENCE

Use of Scientific Ability

A stop-gap program to rescue valuable scientists from mobilization is in progress. Our scientific talent must be used to best advantage.

➤ MANY of the great industrial laboratories upon which this nation depends for its scientific edge over the enemy might well be stripped of the bulk of their brightest young scientists under the present partial mobilization. Even research efforts by civilians employed by the armed forces stand in danger.

There is no government plan to prevent that now, Science Service has learned. An example of the problem is the fact that 32% of the scientists in the great Westinghouse laboratories are in the nation's military reserves.

Government officials, including those in the Defense Department who recognize the value of proper use of our scientific talent pool, and manpower experts of the National Security Resources Board are now working on a stop-gap program to rescue some of these valuable scientists from the present partial mobilization. Other government officials hope to persuade the Selective Service System to adopt a plan which was first discussed three years ago whereby scientifically trained personnel might be used to best advantage in our defense effort.

There are two sides to the coin of scientific talent. On the one hand, some scientific personnel should be withheld from the armed forces because they can be best used in civilian jobs—as physicists were used as civilians to develop the A-bomb in the last war. On the other hand, scientists who cannot pass the physical tests set up by the armed forces can in many instances be used to best advantage in uniform behind the lines.

There are at present more than 2,000,000 men and women in the nation's military reserves. Those who know—scientists and manpower specialists—say that a significant proportion of our scientific talent is among those 2,000,000. The danger is that many of those young scientists are in the reserves for the wrong reason. Some of them were in a college ROTC unit and there received training and classification in military fields unrelated to their scholastic specialties.

Others hold reserve commissions based on their World War II experiences and now have gone far beyond that to achieve their Ph.D.'s in fields more useful to the defense effort.

We have only now begun to fill to an adequate level the scientific talent reservoir which was drained by World War II. In 1950, for the first time since the war, there is one job for every graduating Ph.D. Two years ago there were approximately six

jobs for every newly made Ph.D. It must be remembered that this scientific reservoir has only been filled to a level adequate for peacetime.

Government manpower specialists and leading scientists outside the government—even while a stop-gap plan is only now being formulated—hope the government will provide a long term program for the proper

ENGINEERING

Dual-Purpose Vehicle

➤ A NEW vehicle that does the work of a light tractor, but which can be used on the highway for business or pleasure driving, was revealed in Cincinnati, Ohio, by Crosley Motors, Inc. It is designed particularly for small farmers who can not afford separate farm tractors and road cars. On the highway, it can travel up to 60 miles an hour.

As a farm tractor, it can be used to plow, cultivate, saw wood, spray crops or to pull a trailer wagon. For the highway the standard equipment includes a two-passenger main body to which a quickly attachable pick-up body may be added for additional passengers or for cargo.

utilization of our scientific personnel. They see a need for:

1. A method of taking away from local selective service boards and putting in the hands of a competent national board the decision whether scientists and students of science shall be inducted in the armed forces.

2. A method, on the national level, of allocating scientists in the military reserves to the jobs, military or civilian, where they will best help the national emergency effort.

3. A method, planned and carried through by men who understand science's role in these days of a most scientific war, of allocating the nation's scientific talent where it will do the most good.

None of these has yet been done.

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Two factors of importance in this new Crosley "FarmOroad" is its small size and its low price. In general appearances, it resembles somewhat the front part of the familiar military jeep. Its wheel-base is only 63 inches. With top and windshield down, it is 45 inches high. It will sell for approximately \$800 at the Marion, Ind., factory where it is made.

This tractor-roadster weighs only 1100 pounds but has power enough to pull a ten-inch plow through tough soil. The secret of this is its 26.5-horsepower Crosley engine and special gear system. It has six speeds forward and two in reverse.

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DOUBLE DUTY—This versatile vehicle is an answer to the farmer's need for a machine that will do a light tractor's work and provide transportation too. This photo shows a 10-inch plow mounted on a hydraulic lift. Harrow, cultivator and other implements are also available.

MEDICINE

Hormone Upset in Cancer

An upset in the body's hormone balance may be one of the chief causes of cancer. The steroid hormones are the ones which are thought to affect the growth of tumors.

► AN upset in the delicate balance of the hormone system of the body may be one of the causes of cancer.

This is the opinion of a majority of the cancer experts gathered at an international meeting at the Ciba Foundation, London, to exchange views on the effects of the steroid hormones on the growth of tumors. The steroid hormones include sex hormones, as well as those of the adrenal cortex.

Tumors caused by an upset hormone balance included:

Mammoth tumors of the pituitary glands in mice injected with female sex hormone.

Lymph gland cancers in castrated mice painted with female sex hormone.

Cancerous growth of ovarian tissue implanted in the spleens of castrated mice, in which the pituitary gland churns out excessive amounts of ovary-stimulating hormone.

No tumors formed in old mice, in which hormone balance between the pituitary and ovaries was maintained despite castration because of the reduced functioning of the senile pituitary.

Sex hormones affected the growth of chemically induced prostate tissue cancers planted under the skin of mice. Addition of female sex hormone to the chemically treated prostate tissue doubled the cancer

rate. Adding male sex hormone reduced the rate by three-quarters.

Dr. R. Hertz, of the U. S. National Institutes of Health at Bethesda, Md., pointed out the vital part played by small amounts of dietary vitamins in the hormone-induced growth of tissues. By feeding female chicks and rats chemicals antagonistic to folic acid, he could inhibit the normal growth of the genital tissue in response to injections of female sex hormones.

This growth-inhibiting power of vitamin-antagonizing chemicals holds promise of a powerful anti-cancer tool, but at present the narrow safety margin of the available vitamin antagonists makes their use in the clinical control of cancer not yet feasible.

The exact mechanism by which steroid hormones influence cancer growth is still in doubt. Prof. C. W. Shoppee of University College, Swansea, Wales, cast cold water on the theory that they may be transformed in the body to cancer-causing chemicals of the "polycyclic aromatic hydrocarbon" type.

Despite the structural similarity of the steroids to these cancer-causing chemicals, drastic physical measures, which could not be duplicated in the body, are required to effect the transformation.

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MILITARY SCIENCE

Resources Feel Speed-up

► RUBBER, steel and oil, sinews of military might, will be among the first U. S. strategic resources to feel the national defense speed-up brought by the Korean war.

These and other raw materials of American industry were in the background as President Truman told Congress there may be need for "substantial redirection of economic resources."

Because the United States experienced a dramatic expansion of its industrial potential in World War II, however, and has continued to expand in many fields in a booming peacetime prosperity, this country stands in greater readiness for industrial mobilization now than at the beginning of the last war.

We have synthetic rubber plants to supplement imports of natural rubber. These have already felt the speed-up. Three synthetic rubber plants are already in process of being reopened.

The nation's steel mills, now operating at

100% capacity, can turn out in one year more steel than is made in the rest of the world, including Russia and her satellites.

The President pointed to the steel industry in particular, however, in warning that civilian uses may have to be curtailed to meet military demands.

Petroleum is being pumped out of the ground in record amounts to meet the greatest demand for liquid fuels in the nation's history. Science has taken huge strides in postwar years in finding ways to produce synthetic fuels from coal and oil shales. The President made no mention of oil as a possible shortage resource. But it is among the first needs of an expanded military program.

The list of strategic and critical metals and minerals is long. In World War II, it included over 100 raw materials of the more than 5,000 needed to keep U. S. industry operating in balance.

Within the past two years the Bureau of

Mines and U. S. Geological Survey released an authoritative outline of the U. S. position in minerals.

This country is virtually self-sufficient for coal, natural gas, magnesium, molybdenum, helium, magnesite, nitrates (for explosives), phosphate rock, potash, salt and sulfur.

It depends almost entirely on foreign sources for chromite, manganese, nickel, platinum, tin, industrial diamonds, quartz crystal and asbestos. It must import from abroad part of its consumption of oil, arsenic, bismuth, cadmium, copper, iron ore, lead, mercury, tantalum, tungsten, zinc, antimony, vanadium, high-grade bauxite (for aluminum) and mica.

Which of these materials of industry, both in peacetime and war, may come under allocation and controls was not revealed by the President in his message to Congress. But the outlook is now clear: military needs and production, involving nearly all of these materials, carry top priority.

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METEOROLOGY

Hot Weather Due Over Most of Nation

► MOST of the nation is in for hot weather for the next month—"warmer than normal" the Weather Bureau puts it in its 30-day outlook for the period from mid-July to mid-August. The area with the greatest departure from normal will be east of the Ohio and Mississippi rivers.

Only exception to the rule will be the northern Rocky Mountain states which will enjoy cooler than normal weather.

Upstate New York reservoirs on which New York City water users depend will have to get along with subnormal rainfalls from now to mid-August. The extended forecast section's prediction for the northeast, the Middle Atlantic States and Gulf states is subnormal rainfall.

This means, also, that the nation's dust-bowl areas will continue to have a less than normal amount of rain. The Rocky Mountain and northern plains states, however, will have abundant showers, equaling or exceeding normal amounts.

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ZOOLOGY

Oldest Gray Seal Known Lived Four Decades

► A RECORD age for the gray seal, which is found in the Atlantic, is believed authenticated at 41 to 42 years by Colin Matheson, zoologist of the National Museum of Wales at Cardiff. Following reports of seals that lived to be over 30 years old, a record was located in Sweden of a gray seal caught when a few months old and finally died in captivity in the Skansen Zoo over 41 or 42 years later. This was reported in NATURE (July 8).

Science News Letter, July 29, 1950

NUTRITION-ECONOMICS

From Now On: Food Race

Will growing population outstrip our food resources in the future? Application of technological advances in backward areas will be necessarily slow.

By WATSON DAVIS

Eighteenth in a series of glances forward in science.

► IN this year of the census taker, the experts do not have any too much curiosity about the general results of the present United States census. We know that there are about 150,000,000 men, women and children in this country.

Far more important to us, in one respect, would be an accurate count of people in other parts of the world. We know the number of people in China and even in Soviet Russia in the most general terms with errors that amount to many millions of population.

And the rate of increase for the future, the balance between life and death which will be created by changing world conditions in the next decade, constitute a gigantic question mark. In one sense the future population of the world, determining whether we shall have enough food to feed the people of the future, is a problem of the same order as atomic bombs.

For the United States, the best opinion of population experts is that in the year 2000 our population is likely to be under 200,000,000 and that if we do not reach a peak in population in the next 50 years we shall do so shortly thereafter. This is what is likely to happen if the population trends continue as they are and as we expect them to be in the future. There is also the proviso that atomic warfare will not wipe out overnight some 40,000,000 of our population as it could.

There are some unconventional statisticians who foresee a much larger population in the next 50 years, even as much as 300,000,000, but the general opinion is that with increasing population density and inevitable limitations upon food supply, our population will level off and not go on increasing at the same rate.

In the race between food and people, the problem is that of too many people, as well as too little food. Bad living conditions and the prevalence of disease often neutralize with increased death rates the higher birth rates that occur among non-industrialized populations.

Give the people more food. Save them from death through introduction to medicine and sanitation. Bring them the benefits of more advanced civilization. The population increases.

There does seem to be an eventual brake upon human reproduction that accompanies better education and better living conditions,

even though the practice of birth control is not publicly condoned or encouraged.

Under the world's systems of government, whether they be democracies or dictatorships, there seems to be a continual push for larger numbers of peoples. The dictator cries for more people to defend the homeland. The minorities in a democracy are likely to wish to grow by pure increase in numbers into majorities.

The biological urge, when it is not thwarted by semi-starvation, has a tendency to always increase the population of the earth. The next generation has a great debt to love. In terms of the whole world, some 55,000 new human beings must have breakfast every morning. The total number of people in the world is something like 2,200,000,000.

This figures out that the world's population is rising at the rate of about 200,000,000 every decade, which means more people are added to the world each decade

GEOLOGY

Silt Deposits Studied On Man-Made Lake

► SCIENTIFIC teamwork has provided a definite and encouraging answer to a question which has long troubled westerners—how long will man-made Lake Mead last?

Scientists from the Navy, several government bureaus, universities and private institutions studied and surveyed for two years to find out that it will take until the year 2225 and perhaps longer for Lake Mead, behind Hoover dam, to fill up with silt.

In addition, dams to be built upstream will, by catching some of the silt, extend the useful life of Lake Mead much longer.

The case history study of Lake Mead, said Secretary of the Interior Oscar L. Chapman, "exposed many uninformed estimates of Lake Mead siltation as extravagant and groundless."

One conclusion drawn by Interior officials from the study of Mead and other reservoirs was that the reservoirs would far outlive the period in which they are expected to pay for themselves.

The Navy used sounding equipment developed during the war to measure the extent of the deposits of silt on the bottom of Lake Mead. Long cores of silt from the bottom were examined by the scientists of the U. S. Geological Survey.

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than now exist in the United States.

Little wonder, then, that scientists and statesmen alike are as worried about the great population explosion that is occurring here on earth quite as much as they are about the atomic situation. Communism in Asia is more of a symptom than a cause when the food and people situation of that continent is considered. Terrible as it may be to well-fed Americans, the sheer inability to feed 5,000,000 to 10,000,000 Chinese in the near future, resulting in their deaths by famine, promises to have an effect upon the Asiatic political situation that could not be caused by force of arms.

For a world so compounded of people and the food they need, in the future we must look to:

A. A continuance of the race between people and resources of the world with the assurance, from history, that not for long will superfluous plenty be unused by increasing population.

B. The population problem is basic to the dilemma of war or peace in the future. Motivations and technical progress that can control the population spurt may be capable of avoiding the rush to human slaughter that is war.

C. Today's new applications of technological advances in scientific discoveries may double or quadruple the world's resources of food and energy, such as the discovery of how to industrialize photo-synthesis. Yet the application of such research progress will inevitably be slow in reaching the world's backward areas. Population promises to outrun potential plenty.

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UNTIL 2225—Navy divers went to the bottom of Lake Mead—the nation's biggest reservoir—to bring up samples of silt carried into the lake by the Colorado River. Experts think it will take until 2225 and perhaps longer for Lake Mead, behind Hoover Dam, to fill up with silt.

MEDICINE

Operation for Varicose Leg Ulcer 84% Successful

► AN operation for varicose ulcers of the legs which has been successful in 84% of the patients was reported by Dr. Gunnar Bauer of Mariestad, Sweden, at the meeting of the British Medical Association.

The operation consists in cutting the main deep vein in the back of the knee to block backflow of blood down into the leg.

"After this operation," Dr. Bauer stated, "the calf muscle contractions drive the blood through numerous fine-caliber channels into the muscle veins of the thigh, and no backflow can occur."

In normal healthy persons, the calf muscle contractions can drive the blood back through the big veins of the leg. But in some patients the valves of the big veins have been destroyed and every relaxation of the calf muscles allows the blood to flow back down the main veins, Dr. Bauer explained.

This results in permanent stoppage of blood and overloading of the veins in the lower leg. Pain and ulceration follow.

The operation devised at Mariestad Hospital has been performed 245 times with no deaths and no complications. Of 196 patients examined six months to three years later, 165 had remained healed without symptoms of blood stoppage in their legs. In 31 patients, symptoms recurred at intervals.

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AERONAUTICS

Jet Engine Exhaust Flame Temperature Measured

► THE heat of the consuming flame that shoots from the nozzle of a jet engine or rocket can now be measured with the help of infrared radiation. The flame's temperature is recorded by sending infrared rays through it into an instrument which measures radiant energy.

The method can be used to measure the temperature of flames five feet in diameter reaching 5,000 degrees Fahrenheit. It is a development of Industrial Scientific Company in New York, revealed in the Perkin-Elmer Instrument News, by Dr. W. S. Tandler, director of the scientific company.

Present and future uses of turbojet engines, ram-jets and rockets make it necessary to be able to determine the temperature of their exhaust flames. Jet engine efficiency depends largely upon the operational temperatures. Efficiency increases as the temperature rises. But the temperature used must be below the melting points of materials of which the engines are made.

The new method uses what is called an Infrared Monochromatic Radiation Pyrom-

eter. Infrared radiation from source of known emission strength is passed through the discharge flame whose temperature is to be measured and into an infrared monochromator. This is an instrument to measure and record the radiant energy of certain wavelengths.

The wavelengths used in this process are those characteristic of water or carbon dioxide in the near infrared, since these are products of combustion in any gas stream. The device is rapid and accurate, it is claimed. A major part of the program under which it was developed was carried out under contract with the Air Force Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio.

Science News Letter, July 29, 1950

GENERAL SCIENCE

Science Foundation Members to Be Named

► THE FIRST 24 members of the policy-making Board of the National Science Foundation are expected to be named by President Truman for Senate confirmation very soon. At least one woman will be among those named to the governing body.

Scientists recall the words of the President when he signed the legislation setting up the Foundation: "It can make as great and vital contributions in case of national emergency as I fully expect it to do for us in peacetime pursuits."

The Budget Bureau's request for \$475,000 to operate the Foundation for its first year is now being considered by the House Appropriations Committee. Original legislation authorized \$500,000 for the first year's operation.

Science News Letter, July 29, 1950

INVENTION

Recoilless Gun Has Little Kick

► RECOILLESS gun, a one-man military weapon which will fire a two-pound shell with no greater "kick" than an ordinary shotgun, brought an Army man a patent among the 930 issued in a recent week by the U. S. Government.

In use, it is fired like an ordinary gun with the butt against the shoulder. Its lack of kick is due to a gas "take-off" that is fixed over an opening in the side of the cartridge chamber. This is an elbow funnel affair that carries the exhaust gas back beyond the shoulder of the user. The take-off attachment tapers to the rear, and has a special nozzle on its end.

Maurice E. Barker, U. S. Army, received patent 2,515,180 for this invention. It may be made and used by the government without the payment of royalties.

Science News Letter, July 29, 1950

IN SCIENCE

GEOPHYSICS

Far East Typhoons Cradled By Marshall Islands

► THE Marshall Islands area in mid-Pacific is the "cradle" of typhoons that, as they mature, move west and north toward the Philippines, China and Japan.

Long suspected, this fact has now been definitely established by the Tropical-Pacific Project of the University of California at Los Angeles' Institute of Geophysics.

Under the direction of Dr. Clarence E. Palmer, the research is based upon weather observations taken during Operations Crossroads and represents one of the first important non-military results to come from the atom bomb tests at Bikini.

Another result of the research is this: typhoons and hurricanes are born in the same way. Previously it was thought that Caribbean hurricanes and Pacific typhoons were the result of two entirely different types of meteorological phenomenon.

The U. C. L. A. scientist points out that the research on typhoons indicates how little is known about the great tropical "weather factory" of the Pacific. Since more than one billion people are affected by weather originating in the tropics, there is urgent need for more studies in this area.

Science News Letter, July 29, 1950

MEDICINE

New Streptomycin From Japanese Soil

► DISCOVERY of a new streptomycin from an organism in Japanese soil is announced by five scientists of the Department of Agriculture's Northern Regional Research Laboratory in Peoria, Ill.

The new streptomycin has anti-germ action like streptomycin itself, test tube trials show. Its discoverers suggest that its name be hydroxystreptomycin. It was obtained from a new species of the streptomycetes organisms which produce streptomycin itself. For this organism, the scientists suggest the name *Streptomyces griseo-carneus*.

Search for streptomycin-like substances that would be as effective against disease germs but less toxic than streptomycin and to which the germs would not grow resistant led to the discovery of this new streptomycin. Details of its chemical makeup are reported in the journal, *Science* (July 21), by the discoverers, Dr. Robert G. Benedict, Dr. Frank H. Stodola, Dr. Odette L. Shotwell, Anne Marie Borud and Lloyd A. Lindenfesler.

Science News Letter, July 29, 1950

SCIENCE FIELDS

MEDICINE

Thiourea Shots Prevent Radiation Death

► SHOTS of a chemical called thiourea will protect mice against radiation death, Drs. G. Limperos and W. A. Mosher of the Biochemical Research Foundation and the University of Delaware in Newark, Del., find.

When a group of mice was given this chemical by injection before heavy doses of X-rays, over a third (35.2%) of the animals survived, compared to less than one-tenth (7%) injected after irradiation and only two percent of control animals irradiated but not given the chemical.

Thiourea has been used as a medicine to check over-active thyroid glands in some goiter patients.

The Delaware scientists believe it lowers mortality due to X-radiation because of the protection it gives to certain vital constituents of body cells, such as nucleic acid. Whether it will lessen the remedial effects of X-rays besides reducing the mortality remains to be investigated, they state in their report to the journal, *SCIENCE* (July 21).

Science News Letter, July 29, 1950

MILITARY SCIENCE

North Korean Supply Routes Vulnerable

► IF American bombers knock out the Japanese-developed North Korean industrial plant, problem of replacement of planes, tanks and guns for the Reds might become difficult.

North Korean factories are perfectly capable of turning out much of the heavy equipment now being used by the Communist armies, Prof. George B. Cressey, of Syracuse University and expert on the Far East, told Science Service. But, he added, there is no heavy industry for 1,500 miles between North Korea and Lake Baikal in Siberia.

"Once stockpiles are exhausted, and if our bombers destroy the North Korean industrial potential," he said, "the Russians will have to transport new supplies over Siberian and Manchurian railroads from centers of heavy industry east of Lake Baikal."

That is about 1,500 miles from the North Korean-Manchurian border.

Although there is a short stretch of Siberian-North Korean border, Prof. Cressey pointed out, there is no railroad between Soviet and North Korean territory which does not pass over Chinese Manchuria.

Russia has the choice of three rail routes

into North Korea. One is the double-tracked Trans-Siberian railroad to Vladivostok. Another is the Manchurian route through Kirin to the 20-year-old port of Rashin in northeast North Korea. The third is through Mukden to western North Korea. All three are modern roads, although the latter two are probably single-tracked into North Korea.

The Japanese, who occupied Korea from 1905, extensively developed the North Korean heavy industry and it became an important arms arsenal for the Japs during World War II. There are good deposits of iron and coal in the territory north of the 38th parallel.

Whether the Communists will begin to have supply difficulties probably depends on the estimate made of the ease with which South Korea could be conquered and, therefore, on the size of equipment stockpiles in North Korea, Manchuria and eastern Siberia.

Manchuria cannot be depended upon to supply much to the North Koreans. Russia destroyed Manchurian industry when she withdrew from there after World War II. Little heavy industry has been developed in eastern Siberia, according to Prof. Cressey.

Science News Letter, July 29, 1950

PHYSICS

New Battery Operates At 65 Degrees Below

► A NEW type of wet-cell battery using magnesium and cuprous chloride in place of the familiar lead plates and sulfuric acid has been developed by the Army Signal Corps.

Designed to power radiosonde instruments which weathermen send up for high-altitude meteorological research, the first models of the new battery weigh less than a pound, will operate at temperatures down to 65 degrees below zero and take up only 16 cubic inches. They can be activated by ordinary tap water, and will deliver 12 watt-hours of power.

Science News Letter, July 29, 1950

NUCLEAR PHYSICS

AEC to Issue Report On Atomic Weapons

► A NEW "Smyth report" on the effects of atomic weapons, understood to be "the first completely authoritative document on the over-all effects of atomic weapons," is being compiled by the Atomic Energy Commission and will be sold by the Government Printing Office about August 1.

The use of radioactive material as a weapon and "radiological warfare" will be covered. Hitherto unpublished details about the shock waves resulting from atomic bombs are promised.

Science News Letter, July 29, 1950

PHYSICS-BIOLOGY

Electrical Ear Studies Whispers or Shrieks

► WITH an electrical model of the human ear, scientists are studying the softest whisper and the loudest shriek you can hear. How the ear works is described in strange formulas and mathematical symbols in a new theory being worked out.

A maze of wires, inductors, capacitors and voltage meters has been designed by two Bell Telephone mathematicians, Drs. B. P. Bogert and L. C. Peterson, to reproduce the workings of the inner ear.

This inner ear, or cochlea, is a snail-like spiral tube filled with fluid. Its job is to transform sounds that strike the ear drum into electrical impulses. Thousands of tiny nerves lead these impulses to the brain. The cochlea sorts out the many frequencies which may make up a certain sound; the brain puts them back together again.

The electrical network designed at Bell Laboratories in Murray Hill, N. J., simulates this mechanical action of the inner ear. It sorts out the frequencies of sounds entering the system, causing them to appear at different points along the network.

Results from studies with the new instrument are published in the *JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA* (May). The goal, says Drs. Bogert and Peterson, is a more complete understanding of the dynamics of the cochlea. In simple terms, mathematics is giving a better conception of why and how a noise is a noise.

Science News Letter, July 29, 1950

ARCHAEOLOGY

Mammals in Texas 100,000,000 Years Ago

► FIRST evidence of mammals living in this country in a prehistoric age which began about 100,000,000 years ago has been found in northern Texas.

Two fossil hunters from the Chicago Natural History Museum, Drs. Rainer Zangerl and Robert H. Denison, uncovered jawbones of a family of small mammals known as triconodonts. The discovery was made in a geologic deposit known as the Early Cretaceous Trinity Sands of Montague County, Texas, north of Fort Worth, and reported in the journal, *SCIENCE* (July 14).

The only other known mammalian remains of this age are five isolated teeth found in southern England. Until now, triconodonts were known from fossils tens of millions of years older than the recent finds.

Museum officials are planning intensive investigations of the Trinity Sands area, hoping to find remains of other mammals which may throw light on the development of present-day animals.

Science News Letter, July 29, 1950

ANTHROPOLOGY

Search for Missing Link

An anthropological expedition spends three months in Lebanon, Syria, Iraq and Iran, the area known as "the nursery of man." This is an exclusive coverage.

By DR. HENRY FIELD

► BEIRUT, LEBANON—Is there a true "missing link" to be found in Iraq along the path ancient man first followed from Asia to Europe and Africa?

What has happened to an ancient "lost city" visited only once before in modern times—in 1928? This mass of ruins is also in Iraq, near Kish. When I was there 22 years ago, I became so sick from the desert heat that I could make no explorations.

These are only two of the questions being pursued on a three months expedition along the trail through Lebanon, Syria, Iraq and Iran which was followed by the first ancestors of western man.

Our party which includes Robb White, noted newspaper man, expects to travel thousands of miles, by jeep and Plymouth Suburban across the desert. We have 10 major objectives along the way and at all those places we hope to find things which will add to our knowledge of prehistoric and modern man.

Much of our work will be done between the storied Tigris and Euphrates rivers, an area that once was incredibly rich and fertile. It will be hard work, hot and dirty. It will involve digging in dank and dirty caves, painstaking measurements of living people and long hot rides over the dusty deserts.

Prehistoric Man Was Here

ABOU KEMAL, SYRIA—The Peabody Museum-Harvard University Expedition to the Near East has discovered distinct settlements of stone age or Paleolithic man in this area. Along a northeasterly line from Damascus to the Euphrates river we found 10 places where prehistoric man once lived.

This discovery adds more evidence to support our theory that at one time, millennia before recorded history, this part of the great Syrian Desert was a watered and fertile plain. The flint scrapers and lance heads which were found show that animals must have been plentiful and could be killed with enough ease by the human inhabitants to provide them with food. The discovery of flint handaxes seems also to show that there were trees here where, today, there is only arid desert.

The most interesting of the sites found was on an escarpment overlooking the Wadi Rutga in northeastern Syria. Today man could not survive long on this stony ridge beside a dry and barren stream bed.

However, at one place here, where the

evidence of flint could be seen by flashes of sunlight from the smooth surfaces, prehistoric man must have lived in, for him, great comfort. An abundance of flint provided him with the tools and weapons he needed and a fine assortment of handaxes, choppers, scrapers, knives and flakes were found. Twenty thousand years ago a stream probably flowed in the wadi, and the low slopes were no doubt covered with vegetation.

The discovery of these 10 settlements across the Syrian Desert provides strong evidence to support my theory that prehistoric man used this area as a main route for his migration between Asia, Africa and Europe. For many years the Syrian Desert, desiccated and almost barren, was considered by scientists as a natural barrier to migration similar to that of the salt desert in Persia. However, this discovery of ancient settlements provides further evidence that, in Paleolithic times, the desert was in fact not a barrier at all but a logical area across which to migrate westward to the Mediterranean.

For this part of its itinerary, the expedition had as a temporary member J. H. Keeley, U. S. Minister to Syria. Mr. Keeley made a most fortunate "find" of what appears to be a remnant of prehistoric carving.

Surrealist Animals and Mounds

DEIR EZ ZOR, SYRIA—With permission of the Syrian authorities, the Peabody Museum-Harvard University Expedition to the Near East was allowed to enter the restricted zone around Hassetché in northern Syria. Accompanied by a member of the Syrian police, who was armed with a sub-machine gun, the expedition travelled from Deir ez Zor beside the Euphrates to within sight of the Turkish border at Ras el Ain.

Tell Halaf, one of the most important sites in western Asia, was inspected and the marks of Baron Max von Oppenheim's work were still to be seen. Baron Oppenheim spent many years here laboriously excavating huge stone figures of fantastic animals which would probably be called "surrealist" by moderns. These statues were shipped to Oppenheim's private museum in Berlin only to be destroyed, as the remnants of Babylon were, by bombing in 1944.

The village of Ras el Ain is a pleasant, stone-built town inhabited by Arabs, Turks and Chechens. Water is abundant as there are about 200 bubbling springs which form

the headwaters of the Khabour river. On both sides of the Khabour, we found many grass covered mounds littered with potsherds. Also along the Khabour are the curious villages of about 8,000 Assyrians who were settled in this region by the League of Nations. Their houses are shaped like overgrown conical beehives and are made of mud. These Assyrian refugees appear to be living in some happiness in this healthy but isolated region of the world.

Physical Measurements Taken

HABBANIYA, IRAQ—The origin of the modern Assyrian has long been a puzzle to anthropologists. One of the primary objectives of our expedition to the Near East is to find evidence of this origin and to determine, if possible, whether the present day peoples are descended from the famed Assyrians of ancient times.

In 1934, we took anthropometric records of a group of Assyrians but the measurements were made under most difficult conditions. When the results were tabulated the data were found to be in too great conflict to be used as a basis for determining any origin by comparison. Recently, however, in Habbaniya, conditions for making a new series of measurements were ideal. Here, at this large Royal Air Force base,



LEADER OF EXPEDITION—Dr. Henry Field, leader of the Near East exploration, was formerly associated with the Field Museum of Chicago. He is the first anthropologist in modern years to be allowed to visit Saudi Arabia.



HIGHLIGHTS OF EXPEDITION—The Peabody Museum-Harvard University expedition on an exploration of the "Nursery of Man" visited the various places, as shown by the heavy dotted line, in the countries of Iran, Iraq, Syria and Saudi Arabia. Long known as the crossroads area where stone age people must have lived, few traces of them have hitherto been found and no adequate search for prehistoric man has hitherto been made in this region.

Air Vice Marshal J. N. Boothman provided us with 531 Assyrians who were working there as levys. Under military discipline measurements could be quickly and accurately made.

Fortunately, this group of Assyrians were from tribes including the Upper and Lower Trijari, Boz, Diz, Tkuma, Jelu and Mar-bishu. This provided a good cross-section and enabled us to get much information from the men as to their tribal origin and history. (Some of them were much more interested in the welfare of their relatives in Chicago).

A somewhat confusing characteristic of the typical round-head Assyrian is the flattening of the back of the head. This is caused by the custom of strapping the children into a cradle from birth continuously for the first two years of their lives. The pillow under the head grows progressively harder thus artificially deforming the back of the head. The reasons for thus confining a child seem to be, in the main, two: first, it forcibly prevents the child from crawling about and being a nuisance and, second, there is a superstitious belief that it keeps away evil spirits. This deformation seems to have no ill effect on the mentality of the Assyrians, their heads growing broader in compensation.

We hope that, when this new series of measurements are tabulated at Harvard, new light will be thrown on the original source of these persecuted people.

There was some concern on the part of many of the levys as to the welfare of their 8,000 compatriots who were settled by the

League of Nations in a remote part of Syria. Since the Expedition had recently visited these villages along the Khabour river we could assure the men that all was well with their friends.

Sand Covering Babylon, Kish

AFAG, IRAQ—This mud brick and sun-baked Arab village provided a meeting place for two U.S. expeditions—that of the University of Pennsylvania, led by Dr. Don McCown, and our Peabody Museum-Harvard University Expedition to the Near East.

We, along with Dr. Faraj Basmachi of the Iraq Department of Antiquities, drove down from Baghdad, stopping on the way at Babylon and Kish, and spending some time in search of a "lost" city east of Hilla.

The ruins of Babylon, slowly filling in again with blowing sand, were doubly sad when it was remembered that the treasures of this fabulous and beautiful city are now gone forever. Excavated by the Germans in the early 1900's, almost everything of value was shipped to Berlin. There the city of Babylon was reconstructed almost in its entirety only to be finally destroyed by the air raids on Berlin in World War II. What has become of the famed Ishtar Gate and other remnants is not known although there is a rumor that the Gate survived the bombing and was removed later to Russia.

We also visited Kish. Here, too, blowing sand is rapidly obliterating all traces of this city—according to legend the first founded after the Flood—and it will soon

be only a barren mound rising from the desert floor.

While on the Kish expedition in 1928, Eric Schroeder and I made an exploratory trip between the Tigris and Euphrates rivers. We found a low and unidentified mound surrounded by ruined buildings and with many potsherds scattered about. At that time the going was slow as we both were travelling by horseback. Now the same trip was made again but this time by jeep which, while somewhat more uncomfortable than a horse, was swifter and equally able to climb in and out of the ancient irrigation ditches.

Aid in re-discovering the "lost" city was also given by Air Vice Marshal Boothman who kindly flew down from his base at Lake Habbaniya and circled a low mound topped by a rectangular ruin rising from a perfectly arid waste of desert. Since 1928, however, this mound had been identified by the Iraq Department of Antiquities as Tel Abou Hatab and had been found to be of more or less recent Islamic origin.

Here at Afag the two expeditions met and Dr. McCown invited us to visit the excavation going on at Nippur, some six miles out in the desert from Afag. We were shown the remains of the city and the ziggurat (or temple) and many of the relics taken from the site, including some small gold trinkets and rings and small statues in both stone and ceramic.

Implements Found

TEHERAN, IRAN—Men of the Old Stone Age lived in the caves of Luristan in western Persia.

The first proof has been obtained by our Peabody Museum-Harvard Expedition. Three caves near Khurramabad were studied.

Konji cave, which stands midway up a 1,000 foot limestone mountain, overlooks a vast green plain cut by a meandering river. Snow covered slopes form a continuous range across the valley. This is indeed an ideal location.

Flint implements and flakes made by hunters of the Old Stone Age were found in a small trial trench just inside the cave entrance.

On the slopes outside two other caves in nearby valleys we also found flint flakes indicating prehistoric inhabitation.

It may now be said with certainty that Paleolithic Man lived in Luristan, famous previously for its mountains, fierce tribesmen and superb ancient bronzes.

I believe that ancient man migrated from Central Asia southward along the eastern border of Persia, then turned northwest through the pleasant valleys of Khuzistan and Luristan until the passes of Sulaimaniya, Aqra and Rowanduz led onto the Mesopotamia plain.

We returned to Baghdad to make preparations for excavations at Baradost cave above Rowanduz Gorge in northeastern

Iraq. Here it is hoped to find another link in the chain of evidence for Stone Age cultures now extending from southwestern Sinai, the wilderness of Jordan and the North Arabian or Syrian Desert.

5000 B.C. Pottery Found

KIRKUK, IRAQ—During excavation of a nine-foot sounding trench in Diana Cave high on Baradost mountain in northeastern Iraq, painted pottery with incised designs of Tell Hassuna type has been found.

This pottery, previously known from the northern plain of Iraq and attributed to the period of about 5,000 B.C., must have been used as an article of trade into Kurdistan about 3,000 years before Abraham lived at Ur of the Chaldees.

The pottery was identified as of Tell Hassuna type, which will later be studied with the remainder of the sherds and animal bones in the Iraq Museum in Baghdad.

Diana Cave, located about 3,500 feet up on Jebel Baradost, faces east over a narrow, rocky valley. A pile of snow covered the approach down the slope from above. Native hunters were sent out to supply fresh meat.

Work has been transferred to the Pastoun Cave about a quarter mile to the east.

Bear Is Main Diet

BARADOST MOUNTAIN, IRAQ—Members of the Peabody Museum-Harvard University Expedition to the Near East have been dining for some time on a dilapidated bear.

The party climbed up the Baradost mountain to search in the caves there for traces of prehistoric man.

Since it took the best part of the day to go by mule back and on foot up the mountain in the wildest part of Kurdistan, shopping for food was somewhat difficult. However, the expedition confidently expected to have a steady supply of fresh meat furnished by the expert Kurd marksmen. We were assured that there would be no lack of gazelle steak, ibex shish kabab, quail and grouse.

Instead, for three days the hunters combing the still snow covered mountains found nothing. The members of the expedition were forced to live on what few cans of food there were and the paper-thin slabs of Kurdish bread. This diet was rather meager for men engaged in searching the lower reaches of a huge cave and excavating the entire front of it.

On the fourth day luck turned. Adu David, an Assyrian, returned from the day-long hunt with one large bear. None of the scientists was expert in determining the age of bears, but this one seemed to be well along in the normal life span of such animals. The teeth were yellow and considerably worn, some being entirely missing. The fur was somewhat spotty and several toes were gone, but the bear appeared to be edible.

The cook sliced the meat very thin and skewered it on kabab spikes. He then

cooked it over an open fire and served it on the spikes to the hungry members of the expedition.

By the time the bear was consumed a consensus determined that the meat of that particular bear at any rate was tasty. The degree of toughness was comparable to that of a rubber boot and it was very close to indigestible.

Fortunately for the health and welfare of the scientists more concentrated hunting brought in two ibex to relieve the monotony of bear meat and a supply train of one donkey and a small Kurdish boy was organized. This returned with chickens of the same vintage as the bear and eggs somewhat younger.

Skull and Bone Series Collected

HADITTA ON THE EUPHRATES, IRAQ—Deep in the hidden recesses of a cave which was the home of wolves or hyenas, we found bones, bones, bones, thousands of animal bones—and a few human skulls.

While we examined the bones and the skulls, one member of our Peabody Museum-Harvard expedition stood guard, armed with the thighbone of a camel, in case the residents of the cave showed their resentment by charging us with bared fangs. Wolf footprints were large and clear in the dry dust and in one corner of the cave some fresh meat attracted a swarm of ants.

We reached the cave by wriggling uncomfortably through a narrow rocky tunnel. The air inside was dry and musty, the atmosphere hot, dusty and fetid, rank with the smell of the animals for which this cave was home.

A fine series of skulls and bones of camel, horse or donkey, wolf, hyena, jackal, fox, sheep and goat were collected and carried with great difficulty through the tunnel to the small entrance.

Several fragmentary human skulls and a few mandibles were also found. Four of the skull fragments were heavily mineralized and abnormally thick.

Could these be the skulls of the prehistoric hunters for whom we had been searching? Were they brought in by ravenous wolves or hyenas as a special delicacy? These questions may be solved by chemical analysis at Harvard, where they will be shipped on loan for study.

Examination of three skull caps revealed possible stone knife marks on the edges. This is reminiscent of the Magdalenian skull cap from Le Placard in France which is believed to have been used as a ceremonial drinking cup.

After two hours below ground we were glad to crawl upward to daylight—and fresh air.

Assyrian Belles Measured

HABBANIYA, IRAQ—Blonde, blue-eyed or gray-eyed women with peaches and cream complexions—these and their older,

more thick-set friends, submitted to measurements and physical examinations here—in the interests of pure science.

The Peabody Museum-Harvard Expedition secured statistics on 126 women and 530 men, young and old Assyrians in this Civil Cantonment of the British Royal Air Force. With measurements of stature, sitting height and observations of the head and face, it should be possible to determine the racial position of these men and women among the peoples of Southwestern Asia.

As they passed through the assembly line, observations were also taken of their skin color, hair, eyes, noses and teeth. Medical assistants took their weight, pulse rate and respiration.

With their eyes downcast, the younger girls passed through the ordeal reluctantly but nobly, obeying orders of the R.A.F. But, once it was announced that they were to be photographed, they were far from reticent. They crowded around the camera, eager to get into the picture. The camera took away their shyness, and they crowded around the door and pushed and shoved to get into the room to be measured and observed.

Two days later a set of prints was delivered to them as a reward for their cooperation.

Two basic types were observed: a tall, thin, light-haired, blue-eyed or gray-eyed group, and a thick-set, round-faced, dark brown-eyed group. The Assyrian women appear to be less racially mixed than the men.

Red Ocher for Rosy Cheeks

WESTERN DESERT, IRAQ—In prehistoric times, red ocher was a girl's best friend—as rouge is today.

Far out in the desert lies the Gaara Depression 50 miles long and 20 miles wide. In the center of the depression rise five hills, with hard caps of limestone, making them visible for miles around. On Jebel-el-Afaif, whose summit is adorned with a castle-like rocky formation, the members of the Peabody Museum-Harvard Expedition found an ancient mine. Large lumps of red ocher were strewn on the surface of the slope.

Ocher is any of a class of natural earths, mixtures of hydrated oxide of iron with various earthy materials, ranging in color from pale yellow to orange and red.

Near this ancient "cosmetic" mine, crude flint picks were strewn about in profusion. This was evidently an important source of the priceless red powder used by dozens of generations for body paint.

In addition to giving life to pale cheeks, red ocher was used to assure life in the next world. Graves were believed to have been lined with the material in the hope that because it was the color of blood, it would give life to the corpse.

Red ocher, today, has slipped from a place on the cosmetic tables of the women

of Babylonia and Sumeria to the substance used for branding sheep. While we were at the mine, an Aniza Bedouin boy climbed with easy grace up the hill. He picked up several lumps of the ocher, explaining that, after powdering, water was added to form a thick red paste, which is applied to the backs of sheep as a property mark.

A sandstorm began to roll toward us from the northwest, accompanied by warning gusts of hot wind. We left the mine, and just made the camp before we were engulfed in the whirling sand.

Much Flooded Land

BASRA, IRAQ—Thousands of acres of flooded area were below as the Iraqi Airways plane left Baghdad. Baghdad indeed had become an island, surrounded by the swirling brown waters rushing southward from the high mountains.

Here in 1950 was a small-scale repetition of the flood which covered lower Mesopotamia some 5,000 years ago. Noah and his kinfolk did not have the modern advantages of aerial surveys and warnings by telephone and radio. The heavy winter snowfall was melted by a quick thaw and the twin rivers—the Tigris and the Euphrates—overflowed their low banks and joined into one vast torrent sweeping all before it into the Persian Gulf.

As we flew south we passed over Kish, "the first city founded after the Flood" according to the cuneiform texts. Here I had spent two seasons excavating with the Field Museum-Oxford University Expedition. Here we had found the scientific proof of the Flood. A few miles to our east lay Babylon, its famous Hanging Gardens now a desolate waste of sand.

An hour later we passed near Ur of the Chaldees, the home of Abraham. A Beduin shepherd was leading his flock of sheep and goats to a nearby pasture. This scene was the same as that of 50 centuries ago as recorded in the Bible.

We swung westward to fly over Al Qurna, where the Twin Rivers meet to flow as one into the Persian Gulf. This is the location of the traditional Garden of Eden. Now this area is nothing but a sandy waste with a few low mounds designating former habitation.

Above the inland lake known as the Floral-Hammar, the Marsh Arabs could be seen poling their gondola-like *Mashahuf* through the tall reeds or across open water. Many of their tiny villages were precariously near to the rising waterline.

The plane swooped down onto Basra airport which was fortunately dry as a bone.

Shade Is 112 Degrees

KUWAIT, PERSIAN GULF—It certainly seemed improbable that prehistoric man, for whom this Peabody Museum-Harvard Expedition is searching, ever crossed or lived on the hot and sandy waste of this area, but even here we found crude flint flaked by human hands.

Flying over water and desert from Basra, we landed here in a blast of furnace-hot wind that swept across the landing field. In our search for traces of former habitation, we drove four miles west of Magwa to a low mound. On the summit lie two rectangular lines of dressed stones, either the foundations of small buildings or the remains of graves. Nearby on the slopes I found the stone flakes of crude flint worked by ancient man.

We searched for flint implements around a small lake of bitumen. Col. H. R. Dickson, world-authority on Kuwait, had found a good series in this region. However, drifting sand had covered the area only a few days before.

At the southern extremity of Kuwait on the border of the Neutral Zone we climbed Jebel Gurain, the twin-horned peaks visible from afar. Here we found a few poor flakes indicating the presence of ancient man, although the word "ancient" here may mean but a short span.

Black spots began to flicker in front of my eyes. I felt giddy. The wind was strong. The sunlight intense. The shade temperature was 112 degrees.

Col. Dickson, former British political agent and now adviser to the Kuwait Oil Co., has lived in Kuwait for almost a quarter of a century. He has found stone implements at three other localities. Very generously he presented the finest specimens to the Peabody Museum at Harvard. Col. Dickson and his wife are the authors of "The Arab of the Desert," a recent classic on the way of life of the Bedouin. Mrs. Dickson has collected the flora and fauna of Kuwait, so that their joint efforts form a landmark in the basic research of the Persian Gulf.

The modern population of Kuwait town is markedly different from that of Baghdad. In the market is a rare racial medley of Arabs, Persians, Baluchis, Negroes and a few hawknosed Bedouins from the great hinterland of Saudi Arabia. Here the physical anthropologist would have to select his subjects with the greatest care for his results to be worth recording.

Immense Burial Ground

BAHRAIN ISLAND, PERSIAN GULF—At least 50,000 burial mounds—tumuli, they are called—rise on the main island of Manama half an hour south of Muharraz, where we landed by air.

Local authorities suggest that Bahrain was considered as the sacred spot for burial about 3,500 years ago and that the dead were brought here from all around.

This is similar to the custom prevailing at the shrine of An Najaf in Iraq where thousands of bodies are brought annually by car, camel and donkey to be interred in the holy ground.

The largest Bahrain tumuli are 80 feet high and 150 feet around the base. Stone chambered tombs occupy the central position. Many have been opened during this century, the majority rifled. I am hoping

to obtain permission to open one tomb before leaving Bahrain. Permission must be granted by the Sheik of Bahrain.

No Stone Age traces have ever been found on these islands, the earliest evidence for occupation being contemporary with the earlier phases of the historical periods in Mesopotamia and Persia.

With regard to the modern inhabitants of Bahrain, they are even more mixed racially than the dwellers in Kuwait to the north. For here on these islands have come sailors, fisherfolk, pearl divers as well as Persians, Indians, and Baluchis and many, many others.

C. Dalrymple Belgrave, who has been Adviser to the Sheik of Bahrain for 24 years, suggested that a series of Beharna might prove of anthropometric interest for they are believed to be the descendants of the aborigines, or at any rate the first settlers, on these islands.

Hence I measured 45 Beharna men in the village of Jidd-Hafs on Manama island. They were certainly different from any of the groups I have studied since 1925 in Iraq or Iran. When the measurements and observations have been tabulated and the photographs studied, it may be possible to determine their racial origin.

Land of Singing Sand

QATAR PENINSULA, PERSIAN GULF—The village of Dukhan, a small community in the center of the western side of Qatar Peninsula, lies 40 minutes in a small six-seater plane across the water from Bahrain Island.

Here I talked with Mansur (the local chieftain) as we sipped coffee as only desert-dwellers know how to make it. Mansur is a tall, distinguished-looking Arab in his flowing robes. He dictated to me the names of the Beduin tribes and sub-tribes of this peninsula. He drew with his long forefinger a tribal map. This was the more extraordinary for Mansur was blind.

We drove across to Umin Said on the eastern side, stopping to examine a cave, 120 feet deep in the limestone. There was brackish water at the bottom. Nowhere could I find traces of ancient habitation inside or outside this cave, which long must have been a well-known landmark for water is scarce indeed in this rocky and sand-strewn wilderness.

To the south rose crescent sand dunes which move constantly. Here are the "Singing Sands" where the wind strikes a slope to cause deep moans like a giant in distress.

On the road to Doha we passed several ruined villages. One informant said that in this part of the world after a generation or two the entire population often decided to move along the coast.

The last three hours of the journey were unpleasant. The wind was hot. Dust devils swirled around the car. The scenery was unending low, rocky hills and sand. We arrived panting in Dukhan.

(Continued Next Week)



Seagulls

► IN Salt Lake City there stands a monument to seagulls. It commemorates a critical moment in the early days of the Mormon settlement in Utah when a black cricket plague threatened to destroy the crops for the second year in succession.

Suddenly out of the blue thousands of seagulls appeared and made short work of the insect destroyers. The harvest was safe. The settlers hailed their deliverance from starvation as a miracle. In gratitude they

raised a monument to their saviors, the seagulls.

Less dramatic but more common is the miracle which never fails to impress sea-going travelers, the seagull escort following ocean liners far out in the lonely ocean.

Sometimes the first sign the voyager has that the trip is nearing its end is the appearance of gulls hovering in the wake of the ship, long before he can detect any sign of land. At the beginning of the voyage as the ship slowly left port the gulls were there, wheeling gracefully astern and ready to pounce on any edible refuse cast overboard.

Then at some point the traveler notices that the gulls are gone, that they have turned back, he realized with a thrill that he and the ship are an insignificant dot in the midst of a gigantic expanse of water. It is at this moment that he is apt to cast a glance at the ship's bridge and hope that the captain knows his business.

At least one species of gull, the common

kittiwake, sometimes makes the whole trip, following a ship from one side of the ocean to the other. Young gulls, marked in England, have been subsequently recovered on this side of the Atlantic. The only plausible explanation is that they got here by following ships.

Gulls are scavengers, feeding on refuse or dead fish. They are birds of the northern hemisphere, inhabiting coasts, rivers, and harbors. They are also to be found on large inland lakes such as the Great Lakes and the Great Salt Lake in Utah. The gulls that swooped down to the timely rescue of the Mormon settlers' crops no doubt came from Great Salt Lake.

The flight of gulls is full of grace and skill. They can hang effortlessly in the air for hours, trimming their wings to the wind, slowly circling, scanning, waiting. Throw something overboard, and down they swiftly swoop, for whatever provender the water may yield.

Science News Letter, July 29, 1950

CHEMISTRY

Oscillators for Analysis

► HIGH frequency oscillators similar to small radio sending stations can tell the chemist how much salt is in the sea or how much of a valuable element like beryllium might be lost down the drain. This extends the principle of radio into a new field.

Scientists at the University of Wisconsin and the Oak Ridge National Laboratory have independently described instruments to follow reactions in chemical solutions by use of high frequency oscillators.

The standard method for measuring an unknown amount of material is employed. The chemist keeps adding to a small sample of the solution known amounts of a substance that will combine with it, until the unknown material is all used up. The high frequency device tells when this titration is finished.

The vessel containing the solution to be titrated is placed in the field of a high frequency oscillator while measured volumes of the reagent are added. As the chemical reaction proceeds and composition of the solution changes, the load on the oscillator changes. This produces a measurable change in plate or grid current or in frequency. If one of these quantities is graphed against the amount of added reagent, the curve has a break in it at the point where exactly enough of the reagent has been added to complete the reaction. Such a titration curve is obtained without any additions to show color changes or immersing electrodes in the solution being tested.

Several oscillators ranging in frequency from 5 to 360 megacycles have been built, but considerable development will be needed before the instruments are ready for commercial use.

The effect is believed to be due to minute changes in the capacity of the chemical solutions. Small capacitance changes will produce relatively large changes in plate current of the grid-tuned plate oscillators. At Oak Ridge the system has been used in titrating solutions containing beryllium and aluminum, elements that act either base or acid, depending upon their chemical surroundings.

Science News Letter, July 29, 1950

MEDICINE

Double Danger Faces Pneumonia Patients

► WARNING of a new danger to pneumonia patients was issued by Dr. Thomas Anderson of Glasgow at the meeting in Liverpool, Eng., of the British Medical Association.

The danger is that doctors may be too ready to consider all unusual pneumonia cases as virus or atypical pneumonia. Unusual pneumonias due to bacteria instead of viruses are not uncommon, Dr. Anderson declared.

If the doctor does not base his diagnosis on tests that will show whether or not the cause is the bacteria kind of germ, he may fail to give the patient a sulfa drug, penicillin or one of the other modern remedies effective in bacteria-caused pneumonias. These remedies, with the possible exception of aureomycin, are not effective in virus pneumonias. Consequently doctors are unlikely to give them if they think the pneumonia is virus-caused.

Science News Letter, July 29, 1950

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ANNUAL REPORT 1949—Chicago Natural History Museum, 140 p., illus., paper, \$1.00. Includes the Museum's latest advances in the departments of zoology, botany and geology.

A BIBLIOGRAPHY IN AUDITION—Psycho-Acoustic Laboratory Harvard University—Harvard University Press, Vol. I: A-M, approx. 225 p., paper; Vol. II: N-Z, approx. 210 p., paper; both volumes \$3.00. An alphabetical list of references prepared by the Harvard Psycho-Acoustic Laboratory in cooperation with the Office of Naval Research.

BRUCELLOSIS: A Symposium under the Joint Auspices of National Institutes of Health, United States Department of Agriculture and the National Research Council, September 22-23, 1949, Bethesda, Maryland—*American Association for the Advancement of Science*, 271 p., illus., \$4.00. A reference volume containing data accumulated by workers in the field of brucellosis.

CROSSBRED TYPES OF BEEF CATTLE FOR THE GULF COAST REGION—A. L. Baker and W. H. Black—Gov't. Printing Office, U. S. Dept. of Ag. Circ. No. 844, 23 p., illus., paper, 10 cents.

DAMAGE TO GUAYULE BY INSECTS AND MITES WITH NOTES ON CONTROL—T. P. Cassidy, V. E. Romney, W. D. Buchanan and G. T. York—Gov't. Printing Office, U. S. Dept. of Ag. Circ. No. 842, 19 p., illus., paper, 10 cents.

ELECTRICITY AND MAGNETISM: Theory and Applications—Norman E. Gilbert—Macmillan, 3rd ed., 569 p., illus., \$5.00. A college text brought up to date.

ELECTROMAGNETIC THEORY—Oliver Heaviside—Dover, 386 p., illus., \$7.50. A complete and unabridged edition of a three volume work which appeared early in the twentieth century. Ernst Weber of the Polytechnic Institute of Brooklyn has written a critical and historical introduction.

A GERMAN-ENGLISH DICTIONARY FOR CHEMISTS—Austin M. Patterson—Wiley, 3rd ed., 541 p., \$5.00.

HEAT AND TEMPERATURE MEASUREMENT—Robert L. Weber—Prentice-Hall, 422 p., illus., \$6.65. A discussion of the theoretical principles of heat and temperature measurement and their application.

A HISTORY OF HORTICULTURE IN AMERICA TO 1860—U. P. Hedrick—Oxford University Press, 551 p., illus., \$7.50. The development of gardening, fruit growing and grape-raising from their earliest beginnings in this country through 1860.

THE INTERNATIONAL TRADE ORGANIZATION: Key to Expanding World Trade and Employment—Dept. of State—Gov't. Printing Office, Publ. 3882, 34 p., illus., paper, 25 cents. The history, functions and goals of ITO are discussed with interesting graphs.

PHYSICS: Fundamental Principles for Students of Science and Engineering—George Shortley and Dudley Williams—Prentice-Hall, Vol. I: 471 p., illus., \$6.00; Vol. II: Approx. 796 p., illus., \$7.35. An introductory college text.

PLANT PATHOLOGY—Edwin J. Butler and S. G. Jones—Macmillan, 979 p., illus., \$10.00. A treatise on plant diseases for the advanced student and the research worker. Includes over 400 illustrations.

PRINCIPLES OF GENETICS—Edmund W. Sinnott, L. C. Dunn and Th. Dobzhansky—McGraw-Hill, 4th ed., 505 p., illus., \$5.00. An introductory text.

PROCEEDINGS: FIRST NATIONAL CONFERENCE ON CARDIOVASCULAR DISEASES—American Heart Association, 259 p., paper, \$1.75. Presents the papers read before the conference which took place in Washington, D. C., January 18-20, 1950.

A REVISION OF THE NORTH AMERICAN SPECIES OF BEETLES BELONGING TO THE FAMILY BOSTRICHIDAE—W. S. Fisher—Gov't. Printing Office, U. S. Dept. of Ag. Misc. Publ. No. 698, 157 p., paper, 35 cents. The results of a study made by the author of all the species of the family *Bostrichidae* known to occur in America north of Mexico and including lower California.

STRENGTHENING THE FORCES OF FREEDOM: Selected Speeches and Statements of Secretary of State Acheson, February 1949—April 1950—Gov't. Printing Office, Dept. of State Publication No. 3852, 192 p., paper, 50 cents. Includes many of the speeches which Acheson has made on our policies in Europe and the Far East. Also his speech on Point Four Legislation is given.

THE UNESCO STORY: A Resource and Action Booklet for Organizations and Communities—U. S. National Commission for UNESCO, 112 p., illus., paper, free upon request to publisher, Department of State, Washington, D. C. (Limited supply only.) Provides background on the objectives and programs of UNESCO and gives information on "community action" projects throughout the country.

WHAT'S THAT TREE?: A Key to 150 Tree Species—Herbert Appleton, 24 p., illus., paper, 25 cents. The author lists the main characteristics of the more important trees.

Science News Letter, July 29, 1950

MEDICINE

Cancer Fight Speeded By Research Program

➤ THE fight to stop cancer will be stepped up through a new research program announced at the Fifth International Cancer Congress in Paris.

Detection of materials in everyday life which might cause cancer is one part of this program. Translation of such findings from the laboratory to daily living with the aim of preventing cancer is another part of the new research program.

The program is to be conducted by a Cancer Prevention Committee with international membership. Chairman is Dr. William E. Smith, staff member of the In-

stitute of Industrial Medicine at New York University-Bellevue Medical Center, New York, where the committee will have its headquarters.

Science News Letter, July 29, 1950

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☼ **DRY BOX** for the pantry keeps foods ranging from crackers to salted nuts crisp and tasty even under high humidity conditions. The cover of the 16-inch-long box contains a pouch of a harmless drying agent, which can be reactivated when needed by drying in an oven.

Science News Letter, July 29, 1950

☼ **ELECTRICAL HEATER**, for the home aquarium to keep the water at the proper temperature, consists of two concentric metal tubes with a heating element between. Standing erect on the bottom of the tank, the heat creates a water circulation through the inner tube and the tank.

Science News Letter, July 29, 1950

☼ **NON-FOGGING MIRROR** in the bathroom has behind it an electric heater made of electrically-conductive rubber. The heater operates on ordinary household current and warms the glass to a temperature of 98 degrees Fahrenheit. A switch is provided to turn the current on and off.

Science News Letter, July 29, 1950

☼ **BASS OCARINA**, shown in the picture, sounds like a bass viol and was developed as an instrument suitable for radio and recording and for dance bands. It is provided with a built-in microphone and volume con-



trol, and with shielded cable to connect it with a public address system.

Science News Letter, July 29, 1950

☼ **EXIT LOCK** for emergency doors permits opening the door from the inside at any time by authorized persons with keys or by others in emergencies merely by strik-

ing a clapper. When the clapper is struck, an alarm bell rings, a safety device to prevent stealthy use of the door.

Science News Letter, July 29, 1950

☼ **SCREEN POINTER**, for a lecturer at a distance to indicate a particular spot on a picture screen, utilizes a beam of light that makes a bright round spot or an arrow at the detail to be noted. It is a telescoping tubular affair, about 17 inches long when extended, with battery and lamp within the tube.

Science News Letter, July 29, 1950

☼ **TESTING SET** for a pilot's headset and microphone involves the use of an audio-oscillator and cathode ray oscillator, together with an artificial "ear" and artificial "voice." It takes all the guess work out of testing the delicate essentials of every aircraft's radio system.

Science News Letter, July 29, 1950

☼ **UMBRELLA COVERS** make it possible for a single umbrella to harmonize with the clothes of the user. The plastic covers, in a wide variety of colors and designs, can be put in place on the specially designed frame in two to four minutes.

Science News Letter, July 29, 1950

Do You Know?

Magnolias are called the aristocrats of the flowering trees.

Oil shale does not contain oil; it contains a solid organic material that yields oil when heated.

Barbed wire fence separates northern Norway from Soviet Union; it is an "iron curtain" in restraint of trade and traffic.

Gravitation is a general force by which every particle pulls on every other particle; gravity is the force exerted on a body by the pull of the earth.

The "Coyog" or "Dogote" is a cross-breed between dogs and coyotes frequently found where wild coyotes abound; this cross-breed is notorious for attacks on livestock.

The violent eruption of the volcano Tom-boro, near Java, is claimed to be responsible for 1816 being called "a year without a summer;" the almost world-wide dust resulting cut solar radiation.

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